WHAT IS CLAIMED IS:

1. A router for routing a frame, comprising:

a first memory;

a route-information-receiving unit for receiving route information transmitted by an adjacent router;

a route-information-writing unit for storing said information on a route into said first memory;

a route-information-transmission control unit for controlling transmission of said information on a route to adjacent routers;

a route-information-change-reporting unit for reporting a change in information on a route involving a particular adjacent router to adjacent routers other than said particular adjacent router if information on a route has not been received from said particular adjacent router for at least a predetermined period of time;

a relay-processing unit for routing a received frame on the basis of said route information stored in said first memory;

a temporary-halt-start-informing unit for transmitting a temporary-halt-start notification message indicating a start of a temporary halt to adjacent routers in the event of said temporary halt; and

a temporary-halt-recovery-informing unit for

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transmitting a temporary-halt-recovery notification message indicating a recovery from a temporary halt to adjacent routers in the event of said recovery from said temporary halt.

    2. A router according to claim 1, further comprising:

    a second memory;

    a route-information-saving unit for saving route information stored in said first memory to said second memory in the event of a temporary halt; and

    a route-information-restoring unit for restoring information on a route from said second memory back to said first memory in the event of a recovery from a temporary halt.

    3. A router according to claim 1, wherein, in the event of a temporary halt, said temporary-halt-start-informing unit informs other adjacent routers of a time to recovery from said temporary halt.

    4. A router according to claim 1, further comprising:

    a temporary-halt-start management unit for inputting a notification of a start of a temporary halt from an external source and passing on said notification to said temporary-halt-start-informing unit; and

a temporary-halt-recovery management unit for inputting a notification of a recovery from a temporary halt from an external source and passing on said notification to said temporary-halt-recovery-informing unit.

5. A router for routing a frame, comprising:

a first memory;

a route-information-receiving unit for receiving route information transmitted by an adjacent router;

a route-information-writing unit for storing said information on a route into said first memory;

a route-information-transmission control unit for controlling transmission of said information on a route to adjacent routers;

a route-information-change-reporting unit for reporting a change in information on a route involving a particular adjacent router to adjacent routers other than said particular adjacent router if information on a route has not been received from said particular adjacent router for at least a predetermined period of time;

a relay-processing unit for routing a received frame on the basis of said route information stored in said first memory;

a temporary-halt-start-notification-receiving unit

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for receiving a temporary-halt-start notification message indicating a start of a temporary halt of an adjacent router from said adjacent router in the event of said temporary halt;

a route-information-temporarily-locking unit for requesting said route-information-change-reporting unit to lock an operation to report a change in information on a route involving a particular adjacent router to adjacent routers other than said particular adjacent router when a temporary-halt-start notification message indicating a start of a temporary halt of said particular adjacent router is received from said particular adjacent router;

a temporary-halt-recovery-notification-receiving unit for receiving a temporary-halt-recovery notification message indicating a recovery from a temporary halt of an adjacent router from said adjacent router in the event of said recovery from said temporary halt; and

a route-information-temporary-lock-ending unit for requesting said route-information-change-reporting unit to end a state to temporarily lock an operation to report a change in information on a route involving a particular adjacent router to adjacent routers other than said particular adjacent router when a temporary-halt-recovery

notification message indicating a recovery from a temporary halt of said particular adjacent router is received from said particular adjacent router.

6. A router according to claim 5, further comprising a temporary-halt-recovery-notification-monitoring unit for requesting said route-information-change-reporting unit to end said state to temporarily lock an operation to report a change in information on a route in case a temporary-halt-recovery notification message is not received even after another predetermined period of time has lapsed since reception of a temporary-halt-start notification message specifying said other predetermined period of time.

7. A router according to claim 5, wherein:

said first memory is used for storing status for each piece of route information stored in said first memory;

said route-information-temporarily-locking unit changes status of information on a route involving a router transmitting said temporary-halt-start notification message from normal status to locked status in said first memory;

said route-information-temporary-lock-ending unit restores status of information on a route involving a

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router transmitting said temporary-halt-recovery
notification message from locked status to normal status
in said first memory; and

said route-information-change-reporting unit locks
an operation to report a change in information on a route
for a router with route information set in locked status
but reports a change in information on a route for a
router with route information set in normal status.

8. A router according to claim 1, further
comprising:

a temporary-halt-start-notification-receiving unit
for receiving a temporary-halt-start notification message
indicating a start of a temporary halt from an adjacent
router in the event of said temporary halt;

a route-information-temporarily-locking unit for
requesting said route-information-change-reporting unit
to lock an operation to report a change in information on
a route involving a particular adjacent router to
adjacent routers other than said particular adjacent
router when a temporary-halt-start notification message
indicating a start of a temporary halt is received from
said particular adjacent router;

a temporary-halt-recovery-notification-receiving
unit for receiving a temporary-halt-recovery notification

message indicating a recovery from a temporary halt from an adjacent router in the event of said recovery from said temporary halt; and

a route-information-temporary-lock-ending unit for requesting said route-information-change-reporting unit to end a state to temporarily lock an operation to report a change in information on a route involving a particular adjacent router to adjacent routers other than said particular adjacent router when a temporary-halt-recovery notification message indicating a recovery from a temporary halt is received from said particular adjacent router.

9. A router according to claim 1, further comprising:

means for transmitting a second message indicating a recovery from a temporary halt to adjacent routers when said router is recovered from said temporary halt; and

means for executing control to report a change in information on a route involving a particular adjacent router to adjacent routers other than said particular adjacent router when said second message is received from said particular adjacent router even if information on a route has not been received from said particular adjacent router for at least a predetermined period of time.

10. A router comprising:

means for reporting a change in information on a route involving a particular adjacent router to adjacent routers other than said particular adjacent router when information on a route has not been received from said particular adjacent router for at least a predetermined period of time;

means for transmitting a message to adjacent routers to inform said adjacent routers that said router is temporarily halted when that said router is temporarily halted; and

means for executing control to report a change in information on a route involving a particular adjacent router to adjacent routers other than said particular adjacent router when said message is received from said particular adjacent router even if information on a route has not been received from said particular adjacent router for at least a predetermined period of time.

11. A temporary halting method adopted in a network including a plurality of routers each used for routing a frame, said temporary halting method comprising the steps of:

having a temporarily halted one of said routers transmit a temporary-halt-start notification message

indicating a start of a temporary halt of said temporarily halted router to any one of said routers, which is adjacent to said temporarily halted router, in the event of said temporary halt;

having said temporarily halted router transmit a temporary-halt-recovery notification message indicating a recovery from a temporary halt of said temporarily halted router to any one of said routers, which is adjacent to said temporarily halted router, in the event of said recovery from said temporary halt;

having any one of said routers, which is adjacent to a temporarily halted one of said routers, lock a state of reporting no change in information on a route involving said temporarily halted router to any adjacent one of said routers, which is other than said temporarily halted router, when receiving a temporary-halt-start notification message indicating a start of a temporary halt from said temporarily halted router even if receiving no information on a route from said temporarily halted router for a predetermined period of time; and

having any one of said routers, which is adjacent to a temporarily halted one of said routers, resume a monitoring operation of reporting a change in information on a route involving said temporarily halted router to

any adjacent one of said routers, which is other than said temporarily halted router, when receiving a temporary-halt-recovery notification message indicating a recovery from a temporary halt from said temporarily halted router or when receiving no information on a route from said temporarily halted router for a predetermined period of time.